6.0 Alternative Irrigation Infrastructures for Niagara Region

6.1 GENERAL

Table 3-9 and Table 3-10 provide probable peak day and average annual irrigation demands for the four target irrigation areas of the Niagara Region. The remainder of this study will investigate the alternative solutions to satisfy these demands.

There are two major categories of alternatives for the overall irrigation solution:

- Source Alternatives, and
- Distribution Alternatives.

A complete irrigation solution is a combination of a source alternative and a distribution alternative.

In the subsequent subsections, we will briefly discuss these alternatives.

6.2 SOURCE ALTERNATIVES

For the purpose of this study, a source is a body of water or a system from which water can be taken and supplied to the target irrigation areas during the irrigation demand periods. The Niagara Region is rich in natural and man-made potential irrigation water sources.

The following twelve source alternatives were identified:

1. Municipal Treated Water
2. Municipal Treated Wastewater
3. Welland Canal
4. Lake Gibson/Lake Moodie
5. Twelve Mile Creek
6. Queenston Reservoir
7. Outlet of OPG Tunnels
8. Niagara River
9. Lake Ontario
10. Groundwater
11. Supply from Off-Stream Reservoirs
12. Other Surface Streams

The above list constitutes the long list of source alternatives for this project. A review of the applicability of these alternatives to the proposed project is presented in “Section 7.0: Screening Long List of Alternatives.”

6.3 DISTRIBUTION ALTERNATIVES

For the purpose of this study, distribution system is the infrastructure used to transmit irrigation water from source to farm gate. There are two main distribution alternatives:

1. Pipeline Distribution
2. Open Channel Distribution

A pipeline distribution system is mainly composed of buried pipelines from the source to the consumers.

An open channel distribution system, for the purpose of this study, is an irrigation distribution network using portions of natural watercourses and man-made open drainage systems to convey irrigation water to the farm gates. This type of distribution system is currently being used in Niagara-on-the-Lake. The designation of Open Channel Distribution does not preclude the use of some pipeline in the system. The irrigation water from some sources may have to be transmitted to the heads of the irrigation channels using pipelines. However, minimizing the use of pipes can make significant savings in the initial capital cost of the systems.

An open channel distribution system requires a fairly flat irrigation area preferably with a uniform gentle slope. The lands below the Escarpment have these characteristics. These distribution alternatives will be considered for the East District and West District Zone A.

Some source alternatives do not require a distribution system. The “distributed” source alternatives (Groundwater and Supply from Off-Stream Reservoirs) as considered here preclude the need for a distribution system, i.e. they are based on self-supply at the individual farm level.